



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/509,457	05/02/2005	Sabine Mollus	DE020086US	2736

24737 7590 04/29/2008
PHILIPS INTELLECTUAL PROPERTY & STANDARDS
P.O. BOX 3001
BRIARCLIFF MANOR, NY 10510

EXAMINER

RAMIREZ, JOHN FERNANDO

ART UNIT	PAPER NUMBER
----------	--------------

3737

MAIL DATE	DELIVERY MODE
-----------	---------------

04/29/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/509,457	Applicant(s) MOLLUS ET AL.	
	Examiner JOHN F. RAMIREZ	Art Unit 3737	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 March 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) 2 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 03/04/08 has been entered.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 4, 8 and 10 are rejected under 35 U.S.C. 102(b) as being anticipated by non-patent literature Vullings et al. “*Automated ECG segmentation with Dynamic Time Warping*”.

Vullings et al. disclose a method of determining a corresponding image for a reference image from an image sequence of a moving object by means of a first and a second motion signal (see Figure 4, see section: The DTW algorithm, see abstract), in which the first and the second motion signal represent the respective variation in time of the states of motion of a first motion and a second motion of the object (see Figures 5 and 6), the image sequence represents the first motion of the object as a sequence of

images of states of motion (see Figures 5 and 7, see sections: The DTW algorithm, The reference heartbeat), the reference image represents a state of motion from the second object motion and is acquired at a reference instant during the second motion of the object, including the following steps: a) examining the first and the second motion signal for similarities to determine a similarity function by means of a dynamic time warping method (see Figure 4, see section: The DTW algorithm, see abstract), b) calculating a correspondence instant in the first motion signal by means of the similarity function, the correspondence instant corresponding to the acquisition instant of the reference image from the second motion signal (see Figures 5 and 7, see sections: The DTW algorithm, The reference heartbeat), and c) defining the corresponding image by identification of the image sequence whose acquisition instant corresponds at least approximately to the correspondence instant (see Figures 5 and 7, see sections: The DTW algorithm, The reference heartbeat), wherein the corresponding image represents at least approximately that state of motion of the moving object which is represented in the reference image (see Figure 7, see sections: The reference heartbeat, results).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 3, 5-7 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vullings et al. “*Automated ECG segmentation with Dynamic Time Warping*” in view of Beier “*Advanced Subtraction Angiography: Mask selection and Image Registration*”, in further view of Urbano et al. (US 6,228,030), Dittrich et al. (5,776,063).

Vullings et al. teaches all the limitations of the claimed subject matter except for mentioning specifically the steps of wherein an interpolation image is formed from the corresponding image and a further image from the image sequence, wherein the blood vessels of the heart are filled at least partly with a contrast medium, wherein the image sequence forms an X-ray image sequence or an ultrasound image sequence.

However, the steps of wherein an interpolation image is formed from the corresponding image and a further image from the image sequence, wherein the blood vessels of the heart are filled at least partly with a contrast medium, wherein the image sequence forms an X-ray image sequence or an ultrasound image sequence are considered conventional in the art as evidenced by the teachings of Beier et al. and Urbano et al. or Dittrich et al.

The Beier et al. publication teaches the step of forming an interpolation image and wherein the blood vessels of the heart are filled at least partly with a contrast medium (see abstract, see sections: Introduction and Frame Selection, see first paragraph on page 107). Moreover, the Urbano et al. (see abstract) and Dittrich et al. (see abstract, see figs. 4 and 11, col. 5, lines 29-38) patents teach wherein the blood

vessels of the heart are filled at least partly with a contrast medium, wherein the image sequence forms an X-ray image sequence or an ultrasound image sequence.

Based on the above observations, for a person of ordinary skill in the art, modifying the method disclosed by Vullings, with the above discussed enhancements would have been considered obvious in order to improve image quality.

Claims 11-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vullings et al. "*Automated ECG segmentation with Dynamic Time Warping*" in view of E. G. Schukat-Talamazzini "*Automatische Spracherkennung*".

Vullings et al. does not specifically disclose a method of dynamic time warping with the steps of performing recursion analysis to obtain the similarity function, and wherein the similarity function is monotonic. However, algorithms with the steps of recursion analysis and monotonic properties are conventional in the art as evidenced by E. G. Schukat-Talamazzini (see figures 5.2, 5.3 and 5.4). Based on the above observations, for a person of ordinary skill in the art, modifying the method disclosed by Vullings et al. with the above discussed enhancements would have been considered obvious because such modifications would have provided more accurate results and minimize errors to detect an abnormal condition of the heart.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JOHN F. RAMIREZ whose telephone number is (571)272-8685. The examiner can normally be reached on (Mon-Fri) 7:00 - 3:30 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian L. Casler can be reached on (571) 272-4956. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Brian L Casler/
Supervisory Patent Examiner, Art
Unit 3737

/J. F. R./
Examiner, Art Unit 3737